

OzoNews

A fortnightly electronic news update on ozone and climate protection and the implementation of the Montreal Protocol brought to you by OzonAction

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GLOBAL

1. Kigali Amendment latest ratification
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Congratulations to the latest country which have ratified the Kigali Amendment:

[Mongolia, 27 July 2022](#)

At the Twenty-Eighth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, held in Kigali from 10 to 15 October 2016, the Parties adopted, in accordance with the procedure laid down in paragraph 4 of article 9 of the 1985 Vienna Convention for the Protection of the Ozone Layer, a further amendment to the Montreal Protocol as set out in Annex I to the report of the Twenty-Eighth Meeting of the Parties (Decision XXVIII/1).



Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Status of Ratification 15 October 2016 to [date](#).

[United Nations Treaty Collection](#)

Image: UN Treaty Collection website

2. Parties to the Montreal Protocol to meet in Montreal, Canada for the Thirty-Fourth Meeting of the Parties

With 2 weeks to go, parties to the Montreal Protocol on Substances that Deplete the Ozone Layer will be preparing for the first in-person Meeting of the Parties (MOP34) since COVID-19 shut down life as we knew it.



Delegates will gather in Montreal, Canada from 31 October – 4 November 2022 to discuss a wide range of issues including energy efficiency, identification of gaps in atmospheric monitoring, and the dumping of old and inefficient cooling equipment in Africa, among others.

Noting 35 years of ozone layer and environmental protection under the Montreal Protocol, a high-level roundtable will discuss how the Kigali Amendment can further support climate action mitigation.

[The United Nations Environment Programme \(UNEP\), Ozone Secretariat, October 2022](#)

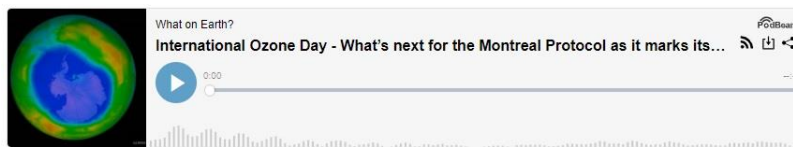
Image: Ozone Secretariat website

3. What's next for the Montreal Protocol as it marks its 35th anniversary?

'What on Earth?' Episode 26 - Podcast of the Environmental Investigation Agency (eia)

On 16 September, the United Nations marks the International Day for the Preservation of the Ozone Layer – and for EIA's Climate team, it's an opportunity to look back at the Montreal Protocol as it marks its 35th anniversary and to consider its role in addressing present and future challenges to the planet.

In this episode, EIA Climate Campaigner Sophie Geoghegan talks to Senior Press & Communications Officer [EIA] Paul Newman about the impact of the Protocol – the most successful international environmental agreement ever – and why it remains so vital for all our futures.



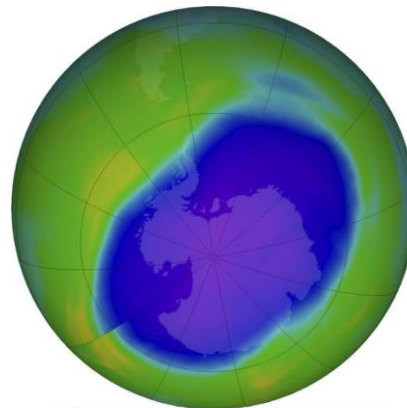
[Environmental Investigation Agency \(eia\), September 2022](#)

Image: eia website

4. Ozone hole grows this year, but still shrinking in general

The Antarctic ozone hole last week peaked at a moderately large size for the third straight year – bigger than the size of North America – but experts say it's still generally shrinking despite recent blips because of high altitude cold weather.

The ozone hole hit its peak size of more than 10 million square miles (26.4 million square kilometers) on October 5, the largest it has been since 2015, according to NASA. Scientists say because of cooler than normal temperatures over the southern polar regions at 7 to 12 miles high (12 to 20 kilometers) where the ozone hole is, conditions are ripe for ozone-munching chlorine chemicals.



In this NASA false-color image, the blue and purple shows the hole in Earth's protective ozone layer over Antarctica on Oct. 5, 2022. It has generally been shrinking but grew to a record-size size this year because of weather conditions. (NASA via AP)

"The overall trend is improvement. It's a little worse this year because it was a little colder this year," said NASA Goddard Space Flight Center Chief Earth Scientist Paul Newman, who tracks ozone depletion. "All the data says that ozone is on the mend."

Just looking at the maximum ozone hole size, especially in October, can be misleading, said top ozone scientist Susan Solomon of MIT.

“Ozone depletion starts later and takes longer to get to the maximum hole and the holes are typically shallower” in September, which is the key month to look at ozone recovery, not October, Solomon said Thursday in an email.

Chlorine and bromine chemicals high in the atmosphere eat at Earth’s protective ozone layer. Cold weather creates clouds that releases the chemicals, Newman said. The more cold, the more clouds, the bigger the ozone hole.

Climate change science says that heat-trapping carbon from the burning of coal, oil and natural gas makes Earth’s surface warmer, but the upper stratosphere, above the heat-trapping, gets cooler, Newman said. However, the ozone hole is slightly lower than the region thought to be cooled by climate change, he said. Other scientists and research do connect cooling in the area to climate change.

“The fact that the stratosphere is showing signs of cooling due to climate change is a concern,” said University of Leeds atmospheric scientist Martyn Chipperfield. The worry is that climate change and efforts to reduce the ozone hole get intertwined.

Decades ago atmospheric chemists noticed that chlorine and bromine was increasing in the atmosphere, warning of massive crop damages, food shortages and huge increases in skin cancer if something wasn’t done. In 1987, the world agreed to a landmark treaty, the Montreal Protocol, that banned ozone-munching chemicals, often hailed as an environmental success story.

It’s a slow process because one of the chief ozone-munching chemicals, CFC11, can stay in the atmosphere for decades, Newman said. Studies also show that CFC11 levels going into the air were rising a few years ago with scientists suspecting factories in China.

Chlorine levels are down almost 30% compared to their peak 20 years ago, Newman said. If these cool temperatures had occurred with chlorine levels of the year 2000 “it would have been a very very large hole, much, much bigger than it is now.”

It’s the third straight year of an ozone hole peaking at more than 9.5 million square miles (24.8 million square kilometers), which Solomon called very unusual and worthy of extra study.

University of Colorado’s Brian Toon points to large fires in Australia and injection of massive amounts of water from January’s undersea volcano eruption as new phenomena that could be having impacts.

[The Associated Press, 13 October 2022, By Seth Borenstein](#)

Image: NASA via AP

Sustainable cold chains: Virtual Exhibition

- The virtual exhibition for sustainable cold chains aims to highlight the critical role of cold chains in ensuring food safety and security, access to vaccines, reducing global warming and preventing ozone layer depletion.

The exhibition showcases commercially available cold chain technologies for food and vaccines, mainly targeting applications and equipment with refrigeration and cooling cycles that use ozone and climate-friendly refrigerants and have enhanced energy efficiency characteristics. It also aims to promote game-changing and systemic approaches, relevant initiatives, and not-in-kind solutions to cold chains

These technologies and approaches directly contribute to meeting national obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer including its Kigali Amendment and the Paris Agreement on Climate Change. Sustainable cold chain contributes to the achievement of many [Sustainable Development Goals](#).

The exhibition is ongoing and continuously updated with submissions accepted on a rolling basis. The partners of the exhibition will continue promoting the exhibition at all relevant events and throughout 2022 and beyond.

Click [here](#) for more information / submit a nomination >>>

Image: Sustainable cold chains website



AFRICA

5. African National Ozone Officers reunite at UNEP Headquarters in Nairobi



Nairobi, Kenya, 5 October 2022 – After nearly three years of not meeting physically due to the COVID-19 pandemic, the Anglophone and Francophone National Ozone Officers (NOOs) of the Africa Regional Networks were physically reunited from 3-5 October 2022, in Nairobi, Kenya. Participants included representatives from the Multilateral Fund Secretariat, the Senior Monitoring and Evaluation Officer, the Ozone Secretariat, Germany's GiZ, UNIDO, World Customs Organization (WCO) and the Union des Associations Africaine des Acteurs de la Réfrigération et de la Climatisation (U-3ARC). This was the first time that the Joint Network meeting was held in Nairobi, giving the delegates an opportunity to visit UNEP Headquarters. The meeting was organized by UNEP's OzonAction Africa Compliance Assistance Programme (CAP) team, with financial support from the Montreal Protocol's Multilateral Fund.

The aim of the meeting was to provide an interactive forum for the Ozone Officers to exchange experiences, develop skills, share knowledge/ideas with their counterparts from across the region, and review the outcome of the implementation of issues identified at previous meetings. The meeting generated a set of concrete actions to be implemented during 2022 and 2023 by each participating country.

The sessions were vibrant, with participants stressing the need for more technical and financial support, more training of technicians (with emphasis on gender parity) and enhanced cooperation amongst the countries, as well as with other stakeholders or organizations with the same environmental objectives. More collaboration with institutions involved in professional teaching and training was also encouraged. Furthermore, the participants considered the accuracy and timeliness of data reporting to be fundamental for the success of the Montreal Protocol, and that it should continue to be given high attention by everyone. Both the Ozone Secretariat and Multilateral Fund Secretariat provided details of their respective reporting requirements.

Ozone Officers expressed the need for more training for the new Online Reporting System for reporting Article 7 data to the Ozone Secretariat, with support from the CAP team in organization of the relevant Network meetings. Given that Parties to the Montreal Protocol that have ratified the Kigali Amendment are required to establish a system for licensing the import and export of new, used, recycled and reclaimed hydrofluorocarbons (HFCs), Parties which have not yet done so were encouraged to establish an enforceable system at the earliest. In addition, non-Parties to [the Amendment](#) were also encouraged to

establish an licensing system for monitoring purposes. The importance of the Regional Networks in promoting coordinated implementation of the Montreal Protocol's hydrochlorofluorocarbons (HCFCs) phase-out and Hydrofluorocarbons (HFCs) phase-down was emphasized.

Compliance and enforcement related to the transboundary movement of substances was also a topic of discussion. Lack of stringent laws and regulations, in addition to weak enforcement measures in many developing countries, has made them vulnerable to dumping and transboundary movement of hazardous wastes. Additionally, mis-declaration of goods, false documentation, and concealment are some of the more common methods smugglers of illegal waste use to evade the law. The Ozone Secretariat has recently partnered with the [World Customs Organization](#) to reinforce the role of customs in implementing national laws and penalizing offenders and seizures disposed of in line with Montreal Protocol provisions. Countries were encouraged to organize border dialogues to further improve cooperation between the customs offices and National Ozone Units (NOUs) of neighboring countries. It was noted that joining and using the informal Prior Informed Consent ([iPIC](#)) mechanism could be instrumental to countries for avoiding unwanted trade in controlled substances and combating illegal trade.

Mr. James Curlin, Head of OzonAction, welcomed the participants and extended his appreciation for the remarkable work done by African governments to implement the Montreal Protocol activities, despite difficult times during the COVID-19 pandemic. After a moment of silence to remember the memory of two Ozone Officer colleagues who passed away during the pandemic, he extended his thanks to the NOUs, all partners, UNEP's Regional Office in Africa, and African CAP team for their support for this meeting.

Mr. Frank Turyatunga, Director of UNEP's Regional Office for Africa, commended the countries which ratified the Kigali Amendment and encouraged the remaining countries to do so at the earliest. He also encouraged the participants to produce common regional strategies to help affirm the implementation of the Montreal Protocol and the Kigali Amendment. The meeting sessions gave the countries an opportunity to share their experiences, both good practices and bad, on the implementation of the legal frameworks; they also shared their concerns and sought clarity on the approaches and guidelines put in the implementation of the two legislative frameworks. It was also a chance for the Parties to share opportunities they discovered as they proceeded with implementation, which could be useful to the countries to achieve the cross-cutting objectives.

In the same vein, the Deputy Director of Law Division, Mr. Arnold Kreilhuber also reiterated that, "the success of ozone implementation rests with all of us" and encouraged all partners to think collectively and act proactively to address the world's pressing environmental issues. He noted the triple planetary crisis that confronts humanity – climate change, pollution, and biodiversity loss – and highlighted that the Montreal Protocol plays a critical role either directly or indirectly in addressing each of them : "it fights against climate change by use of new refrigerants and through energy efficiency, it protects biodiversity by shielding fauna, flora, and humans from excessive ultraviolet radiation, and it provides a comprehensive management of ozone and climate damaging chemicals. The Protocol is thus a tremendously important tool in our arsenal to protect the

planet from these dangers, as well as contributing to the achievement of numerous Sustainable Development Goal targets.”

In his remarks, Mr. Cyrus Mageria, the Deputy Director of Multilateral Environmental Agreements, Ministry of Environment and Forestry, Kenya, stated that his country remains firmly committed to the Montreal Protocol and has made tremendous progress in implementing the HCFC phase out. He noted that the country has developed a national cooling action plan and is also on the verge of having the Kigali Amendment approved by the Parliament. Mr. Mageria further stated that, “ Kenya has already developed a National Cooling Plan (NCAP) as urged by the United Nations Secretary General during the World Ozone Day commemorated on ,” September 16, 2019. In the same spirit, and through this platform, we would like to encourage each one of us to renew their commitment towards protecting our environment, and by extension, the Ozone layer.”

High tax rates being experienced in developing countries make- it hard for the countries to access the equipment, tools, technology, and training needed for the successful implementation of the Kigali Implementation Plan (KIP). Mr. Ole Reinholdt Nielsen, Chief of the Montreal Protocol Division, UNIDO, insisted on the importance of the provision of the required equipment and tools to countries, and that more training of the refrigerant technicians is needed. He mentioned that UNIDO is ready to work with countries to support the training of technicians, as well as work with the relevant OzonAction teams to look into the refurbishing, maintenance, and acquisition of the relevant equipment and tools needed.

On matters touching on customs and transboundary movement of substances, including refrigerants, Mr. Jiabin Qin, Compliance and Facilitation Directorate, World Customs Organization, shared on the priorities of the organization, which included circular economy, waste management, and greening of the WCO instruments. He mentioned that there is need for coordinated efforts to tackle matters of common concern, including wildlife, waste, and substances controlled by the Montreal Protocol, and that they will work closely with national contact focal points and strengthen their collaboration with Customs across countries, to expand their operational expertise on tolls and technology towards the implementation of the Montreal Protocol. Currently, there are 29 regional training customs centers globally. WCO’s [Operation Demeter](#) and [Operation Thunder](#) have helped in thwarting transboundary shipments of illegal waste and ozone depleting substances (Operation Demeter VI) and striking off illegal wildlife and timber trafficking networks (Operation Thunder). Mr. Qin also informed the Participants of the regular changes the organization makes to its environmental instruments, usually every 5 years, including changes to Harmonized System (HS) codes and nomenclature.

Mr. Madi Sakande, the President of the [U-3ARC](#), a Union of Associations of African Actors in Refrigeration and Air Conditioning, touched on the importance of the use and strengthening of associations involved in the refrigeration and air conditioning sectors towards the phase-out of HCFCs and HFCs in Africa; this ensures coherence in the implementation plans, strategies and objectives. Currently, there 44 African countries who are members of the U-3ARC association. He further mentioned that support will be given to countries who wish to be part of the Association and that the Union is ready to work with organizations with similar environmental objectives to support the African countries to enhance their refrigeration expertise.

The meeting participants included 12 female and 33 male Ozone Officers. Parties were encouraged to promote gender mainstreaming when implementing Montreal protocol objectives, and with the vision to spearhead this initiative, the CAP was encouraged to start scheduling training sessions as soon as possible.

In the margins of the meeting, the Fund's Senior Monitoring and Evaluation Officer conducted interactive discussions with groups of NOOs as part of the data collection exercise for the Multilateral Fund's evaluation of the Regional Networks of Ozone Officers.

Contact:

[Patrick Salifu](#), Montreal Protocol Regional Coordinator for Anglophone Africa

[Yamar Guissé](#), Montreal Protocol Regional Coordinator for francophone Africa

Images: OzonAction website

6. Casablanca-Based Union Seeks to End Dumping of Obsolete AC Units in Africa

Africa imports 650,000 air conditioning (AC) units annually. A recent study shows that the AC exported to Africa does not meet international standards.

Rabat - The Union of African Associations of Refrigeration and Air Conditioning Stakeholders (U-3ARC) issued in September a declaration to denounce the practice of dumping absolute air conditioning (AC) in Africa.

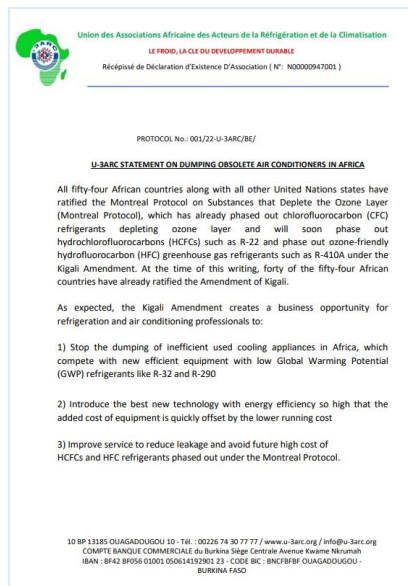
Through the declaration, the Casablanca-based business association called for putting an end to the harmful practice, suggesting that the AC units exported to Africa do not meet international efficiency standards.

The declaration sheds light on the many risks associated with the use of obsolete inefficient used cooling equipment, maintaining that despite their initial low cost, these appliances cost more in terms of energy consumption.

In addition to harming the environment, the obsolete AC units render new efficient equipment uncompetitive, the report adds.

Calling for an energy-efficient technology for the AC market in Africa, the union argued that the low operating costs can quickly offset the high equipment cost.

Data cited in the report shows that, as of 2020, 35% of the AC units sold in many of Africa's largest countries are low-efficiency units, with almost half containing R22, a refrigerant that is no longer produced or imported in 2020 due to its harmful features on the ozone layer.



Africa imports annually 650,000 AC units that do not meet international efficiency standards set during the COP3, the data shows.

That Africa is the dumping ground for the world's waste is hardly news. In 2006, Abidjan in Cote d'Ivoire made headlines after a shipping firm reportedly dumped 500 tonnes of toxic waste in multiple locations close to the city. Only hours later, the city's residents experienced breathing issues, and some developed skin irritation. In the following weeks, over 100,000 were seeking medical attention, and more than 15 died.

[Morocco World News, 3 October 2022, By Jihane Rahhou](#)

Images: Morocco World News website

See also >>>

- [U-3ARC Statement on dumping obsolete air conditioners in Africa](#)

- [U-3ARC Union of Associations of African Actors in Refrigeration and Air Conditioning](#)

7. 'ColdHubs' Enterprise Wins Harvard's Roy Award for Environmental Partnership

Climate-Friendly Cold Storage Reduces Food Waste and Improves Incomes for Thousands of Nigerian Farmers



CAMBRIDGE, MA - The Environment and Natural Resources Program at Harvard Kennedy School's Belfer Center for Science and International Affairs announced today that ColdHubs Limited is the winner of the 2022 Roy Family Award for Environmental Partnership. The company—born out of a partnership between the Smallholders Foundation (of Nigeria), the Institute for Air Handling and Refrigeration (ILK Dresden), and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)—uses solar-powered walk-in cold rooms to reduce post-harvest losses for smallholder farmers across rural Nigeria.

The prestigious Roy Family Award is presented every two years to celebrate an outstanding cross-sector partnership project that enhances environmental quality through novel and creative approaches. This year's winning project pioneered a highly replicable cooling solution to reduce food waste and associated greenhouse gas emissions in Nigeria, while also increasing economic opportunity and food security for smallholder farmers.

In Nigeria, infrastructure issues such as lack of electrification and cold storage along the food supply chain, combined with the country's hot climate, mean an alarming 40% of food produced every year is lost before ever reaching consumers. According to the World Bank,

this food loss equates to 31% of Nigeria's total land use and 5% of its greenhouse gas emissions. In a country where agriculture employs two-thirds of its labor force, many smallholder farmers in rural areas must race to sell their fresh produce in the morning before it spoils in the midday heat, or else are forced to rely on costly, polluting diesel-powered refrigeration—resulting in slashed profits either way.

ColdHubs provides energy-efficient, solar-powered walk-in cold storage rooms to fill Nigeria's cold supply chain gaps. Using catalytic funding provided by GIZ, ILK Dresden led the technical research and prototype design while the Smallholders Foundation brought its regional expertise, market access, and technical know-how to the collaborative effort. Farmers pay a flat daily fee per crate of perishable produce stored in the cold room, extending the freshness of fruits and vegetables from 2 to 21 days.

In 2021, ColdHubs' 54 operational units saved 52,700 tons of produce from spoilage, making more safe, nutritious food available for consumption by Nigerians. By reducing post-harvest loss, ColdHubs also doubled the average household income of the 5,250 smallholder farmers, retailers, and wholesalers it serves, from USD \$60 to \$120 per month. With the option to store food safely for longer, farmers are able to negotiate better prices for a higher quality product, leading to additional revenue gains.

"ColdHubs provides a technical solution and a self-sustaining business model that could be replicated in different countries and regions to uplift many more thousands of farmers," said **Henry Lee**, Director of the Belfer Center's Environment and Natural Resources Program, which coordinates the Roy Award. "Our committee of reviewers was especially impressed with how the partnership successfully transitioned from nonprofit collaboration to a commercial venture while maintaining its original mission."

Food waste is not a problem unique to Nigeria: the United Nations estimates that 25-30% of all food produced worldwide is never eaten and generates approximately 8-10% of global greenhouse gas emissions annually. Over the next two years, ColdHubs will seek to expand its cold storage footprint in Nigeria by commissioning 50 additional cold rooms, while simultaneously exploring opportunities to partner with local investors in Rwanda, Kenya, Senegal, and Benin.

ColdHubs was selected from a pool of high-potential projects from around the world that are striving to address tough environmental problems ranging from reducing human and environmental exposure to hazardous chemicals to decarbonizing the global shipping industry. A committee of both Harvard and outside experts evaluated the nominees against the following criteria: innovation, effectiveness, significance, and transferability.

The award will be presented to the partners during a celebration hosted at Harvard Kennedy School later this year.

Harvard Kennedy School, 12 September 2022, By Elizabeth Hanlon

Images: Cold Hub

8. La Tunisie ambitionne de réduire l'utilisation des HFC dans le secteur de réfrigération et de conditionnement de 80% en 2045



La Tunisie prépare depuis le début de cette année, en collaboration avec des structures onusiennes un plan national de réduction progressive de l'utilisation des hydrofluorocarbures ou HFC, qui sont de puissants gaz à effet de serre, dans les secteurs de réfrigération et de conditionnement, de 80% en 2045, a indiqué vendredi, Zouhour Methammem Helali, chef du cabinet de la ministre de l'environnement.

Elle oeuvre également, à la mise en oeuvre de plusieurs projets d'investissement pour limiter l'usage des produits HCFC en collaboration avec l'Organisation des Nations Unies pour le développement industriel (ONUDI) et le programme des Nations Unies pour l'environnement (UNEP), a-t-elle ajouté lors de la cérémonie de célébration à Tunis, de la journée Mondiale de l'Ozone et du 35ème anniversaire du Protocole de Montréal.

Il s'agit de l'achat et l'installation de matériels industriels au profit des institutions tunisiennes actives dans le secteur, afin d'éliminer 725 tonnes des hydrochlorofluorocarbones ou HCFC soit environ 1,3 million de tonnes en équivalent de CO2 en 2030.

La Tunisie se penche aussi, sur le renforcement des capacités techniques afin de maîtriser davantage l'utilisation des HFC dans le secteur de la réfrigération et du conditionnement et ce avec la certification de 65 formateurs selon les normes européennes et l'équipement de 6 centres sectoriels de formation dans le domaine de conditionnement à Tunis, Nabeul, Tabarka, Kairouan, Sfax et Djerba, en matériel de pointe.

A la fin de 2021, la Tunisie a enregistré l'importation et la consommation de 376,1 TM des substances HCFC, soit une réduction de 48,11%, par rapport au niveau de référence de la consommation nationale (725 TM), a indiqué de son côté, le coordinateur de l'unité Nationale d'Ozone relevant de l'ANPE, Youssef Hammami.

Parmi les principales réalisations accomplies en 2021/2022 dans ce secteur figure le renforcement des capacités techniques des techniciens frigoristes sur les bonnes pratiques de gestion des fluides frigorigènes fluorés réglementées par le protocole de Montréal (HCFC, HFCs), a-t-il ajouté.

La Tunisie accorde une grande importance à la mise à niveau de ce secteur à travers, notamment, le recyclage et la régénération des fluides frigorigènes, l'adoption des bonnes pratiques de gestion des fluides frigorigènes, le contrôle de l'étanchéité des installations frigorifiques, l'instauration d'un système de certification dans le secteur de la réfrigération et de la climatisation, l'équipement des centres sectoriels de formation professionnelle en équipements didactiques de formation et l'élaboration d'un manuel de formation et de certification.

African Manager, 16 septembre 2022

Images: African Manager website

ASIA AND THE PACIFIC

9. "Learning process"- Pacific Island Countries Network meeting for Ozone Officers in Fiji

Fiji stands with our Pacific ozone family in making a significant contribution in the fight against climate change through the implementation of the Kigali Amendment at national level, says Director Environment Sandeep Singh.

She made the statement at the opening of the second Pacific Island Countries Network meeting for Ozone Officers in Fiji at the Warwick Fiji yesterday.



"The Pacific network has demonstrated strong collaboration at the regional level to phase-out hydro chlorofluorocarbons (HCFC) and I am urging all Pacific Island Countries to maintain our regional strength for the hydrofluorocarbon (HFC) phase-down," she said.

The director stressed that while most of the PIC were preparing for HFC freeze from January 1, 2024, it was important to keep in mind that Article 5 countries needed to maintain HCFC phase-out achievements, which all PICs had phased out consumption ahead of the obligations.

"I encourage our Pacific neighbours to continue effective regional and global co-operation within the Montreal Protocol as it has successfully phased out substances that depleted the ozone layer and will phase down substances that contribute to high global warming through the Kigali Amendment."

The week-long discussions on the work of the Montreal Protocol will focus on exchanging experiences, developing skills and tapping into the expertise that will be available at the meeting.

"I urge all our ozone officers to take the opportunity to learn from the experiences of each country, learn from our experts and contribute to positive discussions and recommendations especially on the preparations towards the Implementation Plans for Kigali Amendment and not forgetting preparations for the Meetings of the Parties (MOP) in Montreal Canada at the end of this month."

Ms Singh thanked the United Nations Environment Programme and the Multilateral Fund for their support in building capacity for the smooth implementation of the Montreal Protocol work and multilateral fund projects that ensured countries adapted to environmentally friendly refrigeration and air-conditioning (RAC) technologies.

[The Fiji Times, 11 October, 2022, By Monika Singh](#)

Images: The Fiji Times website

10. The Philippines begins 3rd stage to phase out ODS

The Department of Environment and Natural Resources-Environment Management Bureau (DENR-EMB) has started the third stage of the campaign against ozone depleting substances (ODS) in the country.

This, as the government started its action plan to phase out hydrochlorofluorocarbons (HFCs).

DENR-EMB Director William Cuñado said HFCs are commonly used as alternatives to ODS.

"While HFCs are not ozone depleting substances themselves, they are greenhouse gases which can have high or very high global warming potentials, ranging from about 12 to 14,800," Cuñado said.

"The phase out of HFCs under the Montreal Protocol started its negotiation in 2009, and the successful Kigali Amendment continues the historic legacy of the Montreal Protocol," he said.

Cuñado added that the Kigali Amendment aims to reduce the emissions of powerful greenhouse gases that could prevent up to 0.5 degrees Celsius of global warming by the end of this century while continuing to protect the ozone layer.

He said the phase out of HFCs will provide significant environmental benefits and will stimulate a lot of innovation and design improvements.

Cuñado said the country targets to reduce HFC consumption by 10 percent, 30 percent, 50 percent and 80 percent by 2030, 2035, 2040 and 2045, respectively.

He said the Kigali Amendment took effect on Jan. 1, 2019 as former president Rodrigo Duterte signed the ratification document on June 23, 2022.

Cuñado said the EMB continues to conduct capacity building and training for handling ODS alternatives in the servicing, manufacturing and production sectors.

"The EMB imposed licensing and quota system to the importers-exporters of ODS for monitoring purposes and reduction of consumption of ODS geared toward the country's compliance to its obligations to the Montreal Protocol," he said.

Cuñado said the DENR established the Philippine Ozone Desk to monitor the country's compliance under the Montreal Protocol.

He added this led to the adoption of the Kigali Amendment by the parties to the Montreal Protocol on substances that deplete the ozone layer on its 28th Meeting in Kigali, Rwanda on Oct. 15, 2016, where an agreement was reached to phase out the production and consumption of HFCs.

[The Manila Times, 17 September 2022, By Bella Cariaso](#)

Images: The Manila Times website



11. Australia is considering restrictions to reduce the high use of R404A in commercial refrigeration

Speaking at ARBS [Air Conditioning, Refrigeration & Building Services], the director of the ozone and climate protection section in the Department of Climate Change, Energy, the Environment and Water, Patrick McNerney, said the government is considering a range of options but wouldn't commit to specific restrictions.

"The department is concerned about the high use of R404A because it has not reduced at the rate anticipated despite alternatives being widely available," he said.

"Australia will consider restrictions on new equipment to help to encourage change and support the HFC phase-down.

"Restrictions might be appropriate where an equipment sector is slow to transition to less harmful refrigerants or there is a persistent supply of new equipment using higher GWP refrigerants in a sector where alternatives are widely in use."

McNerney said the department will be advising government and this process has begun.

"The uptake of lower GWP automotive refrigerants has been slow but is starting to pick up and we are expecting to see the pace of change increase," he said.

"In Australia we have managed our transition across refrigerant types in a partnership between government regulation and industry innovation.

"Industry has driven significant change to reduce direct and indirect emissions through changes in product design, the use of lower global warming potential gases and energy efficiency."

Referring to the Cold Hard Facts series of reports on the refrigeration and air conditioning industry, McNerney said the refrigerant bank has likely peaked in carbon dioxide equivalent terms, even though the amount of RAC equipment is increasing.

"The equipment bank has been stable at around 53,000 metric tonnes over the past 3 years but is projected to grow to around 60,000 metric tonnes by 2030, while the global warming potential of the bank is forecast to decrease," he said.

McNerney said the Montreal Protocol has been particularly successful. "As a result of actions under the Montreal Protocol, the ozone layer is predicted to recover in the southern hemisphere by mid-century," he said.



“Actions taken under the Montreal Protocol avoided 135 billion tonnes of carbon dioxide equivalent emissions from 1990 to 2010, more than that achieved under the Kyoto Protocol first commitment period.

“The global HFC phase down will reduce emissions equivalent to 72 billion tonnes of carbon dioxide by 2050 and avoid up to 0.4°C of global warming by the end of this century.

“The Montreal Protocol is now looking at ways to improve energy efficiency in the refrigeration and air conditioning sectors to further protect the climate.”

[Climate Control News \(CCN\), 10 October 2022, By Sandra Rossi](#)

Images: CCN website

NORTH AMERICA

12. California to Prohibit Sale of High-GWP HFCs from 2033

California Governor Gavin Newsom has signed a new law – [SB 1206](#) – that will accelerate the state’s phasedown of HFCs and increase the adoption of “low and ultra-low GWP alternative refrigerants,” which are classified as less than 150 and less than 10, respectively.



California Governor Gavin Newsom signed Senator Nancy Skinner's bill into law, accelerating the state's phasedown of HFCs. (Source: Nancy Skinner)

Under SB 1206, which was submitted by Sen. Nancy Skinner (Democrat from Berkeley), the sale or distribution of bulk HFCs or HFC blends that exceed a specified GWP limit is prohibited in California. However, there is an exception for refrigerants that have been reclaimed, which will still be available for servicing existing equipment.

It is believed that this new law will help California meet its climate goals to reduce statewide HFC emissions by 40% by 2030, based on 2013 levels.

California’s new HFC phasedown schedule

As of January 1, 2025, the GWP of refrigerants entering the market in California may not exceed 2,200. This would mean that R404A and R507, which are commonly used in commercial refrigeration systems, would no longer be permitted for sale.

From January 1, 2030, the GWP limit will be reduced to 1,500, which would prohibit the distribution of R410A and HFC blends like R407A and R407C.

By January 1, 2033, the maximum GWP of refrigerants entering the Californian market must not exceed 750, banning the sale of refrigerants like R448A, R449A and R134a.

From January 1, 2025, SB 1206 mandates that only reclaimed refrigerants can be used to recharge or service existing state-owned or -operated stationary equipment requiring HFCs with a GWP of greater than 750.

The law requires the California Air Resources Board (CARB) to publish, by January 1, 2025, its plan to transition the state's economy, by sector, away from HFCs and to ultra-low or no GWP alternatives – such as natural refrigerants like ammonia/NH₃ (R717), CO₂ (R744) and propane (R290) – no later than 2035. This plan must include details on incentives, workforce development, and a reclamation system to support the state's transition.

The CARB is also required by the new law to issue sector-based regulations to support the transition to low and ultra-low GWP alternatives to HFCs “unless it is not practicable for entities in the sector to comply with the requirement.”

The law defines GWP as the 100-year GWP value of a refrigerants.

Additional support

According to international NGO the Environmental Investigation Agency (EIA), California has also allocated US\$45 million in new funding to the CARB to support the state's transition away from HFCs.

This funding will be split between two programs. US\$25 million will go to the F-Gas Reduction Incentive Program (FRIP), and US\$20 million will go to the Equitable Building Decarbonization Program.

Another bill – [AB 209](#) – directs the California State Fire Marshall to complete updates to state building codes for low-GWP alternatives by July 1, 2023, explained the EIA.

'Groundbreaking' law

The EIA has applauded California and Skinner in particular for finalizing the new legislation that “goes further than any law before toward eliminating super-pollutant HFCs.”

“This groundbreaking new law paves the way for other states to step up their climate ambition,” said Avipsa Mahapatra, Climate Campaign Lead at the EIA. “Piloting ambitious novel approaches at the state level, with funding to match, would be key to raising the bar on accelerating HFC phase-down nationally.”

“California is now on a clear path toward nearly eliminating HFCs by 2035,” said Christina Starr, Senior Policy Analyst at the EIA. “This unprecedented new law goes further than any other on the books globally to restrict new HFCs from entering the market. The state is backing this up with significant new financial resources to incentivize and accelerate the transition. It's a bellwether of how quickly these chemicals are becoming obsolete.”

According to the EIA, SB 1206 is expected to accelerate emission reductions in existing cooling equipment using HFCs by encouraging faster retrofit and replacement with low-GWP alternatives and increasing demand for recovered and reclaimed refrigerants.

California's HFC emissions

According to the state legislature, HFC leaks from HVAC&R equipment are a major source of greenhouse gas emissions in California, as well as globally. The average commercial refrigeration system leaks 25% of its refrigerant charge annually, which is equivalent to 1,780 metric tons of CO₂e.

By replacing high GWP HFCs with low-GWP alternatives, California could “significantly minimize the climate impact of [HFCs],” said the state board.

“It is the intent of the Legislature to support small businesses in the transition of the state’s economy to reclaimed refrigerants and alternatives to hydrofluorocarbons that have no or very low global warming impact as soon as possible,” it added.

[Ammonia21, 6 October 2022](#)

Image: Ammonia21 website

13. Former Miami Resident Sentenced for Smuggling Illegal Refrigerant from China to U.S.

MIAMI – Jorge Murrillo, 69, formerly of Miami, was sentenced to 15 months in federal prison for conspiring to violate the Clean Air Act (CAA) by importing over 300,000 kilograms of illegal hydrochlorofluorocarbon-22 (HCFC-22) worth more than \$1.5 million from China. HCFC-22 is a widely used refrigerant for residential heat pump and air-conditioning systems.



According to court records and a Factual Statement filed in court, Murrillo smuggled large quantities of HCFC-22 into the United States to sell on the black market. Murrillo and his co-defendant would negotiate with a Chinese manufacturer for the purchase of large quantities of HCFC-22 and then import them into South Florida ports. At no point did he or his companies or associates hold unexpended consumption allowances that would have allowed the legal importation of HCFC-22. Between June and August 2007 Murrillo conspired to, and otherwise smuggled, approximately 309,536 kilograms of HCFC with a market value of \$1.5 million into the U.S. Murrillo resided outside the United States from the time of his indictment in 2012 until his arrest in Miami in May 2022.

In addition to his prison term, U.S. District Judge Donald L. Graham sentenced Murrillo to one year of supervised release. Judge Graham also ordered him to pay \$5,794.84 in restitution to Homeland Security Investigations for costs associated with storing the illegal merchandise. Murrillo’s co-defendant, Norberto Guada, was previously convicted in 2012 of illegally importing HCFC-22 and served a federal prison sentence.

The CAA regulates air pollutants, including ozone depleting substances such as HCFC-22. The CAA and its implementing regulations established a schedule to phase out the production and importation of ozone depleting substances, with a complete ban starting in 2030. To meet its obligations under an international treaty to reduce its consumption of ozone depleting substances, the United States issued baseline consumption allowances for the production and importation of HCFC-22 to individuals and companies. Those allowances were incrementally decreased culminating in a complete HCFC phaseout in 2030. To legally import HCFC-22 during all points in the phaseout, one must hold an unexpended consumption allowance.

Juan Antonio Gonzalez, United States Attorney for the Southern District of Florida; Charles Carfagno, Special Agent in Charge, U.S. Environmental Protection Agency (EPA), Criminal Investigation Division, Southeast Area Branch; and Michael Buckley, Acting Special Agent in Charge, Homeland Security Investigations (HSI), Miami Field Office, announced the sentence.

EPA, Criminal Investigation Division and HSI Miami investigated the case. Customs and Border Protection assisted. Special Assistant U.S. Attorney Jodi A. Mazer and Assistant U.S. Attorney Thomas Watts-FitzGerald prosecuted it.

Related court documents and information may be found on the website of the District Court for the Southern District of Florida at www.flsd.uscourts.gov or at <http://pacer.flsd.uscourts.gov>, under case number 12-cr-20514.

[The United States Department of Justice, 5 October 2022](#)

Image: US Department of Justice website



14. Fluorinated Gases (F-Gas) Overview and Opportunities – Webinar

Tuesday, October 18 from 2 – 3 PM Eastern!

Presenters from Wheatlands Aire Valley Engineering (WAVE) Refrigeration will explain fluorinated gases (F-gas) regulations in the European Union and United Kingdom. Attendees will learn about the importance of different F-gas maintenance methods and options for integrating heat reclamation with HVAC system for different retailer sizes.

This webinar will not highlight any specific technology, supplier, or contractor.

Join on your computer, mobile app or room device

[Click here to join the meeting](#)

Join with a video conferencing device

sip:teams@video.epa.gov

Video Conference ID: 113 228 609 9

[Alternate VTC instructions](#)

Or call in (audio only)

[+1 202-991-0477,578920254#](#) United States, Washington DC

Phone Conference ID: 578 920 254#

[Find a local number](#) | [Reset PIN](#)

Image: GreenChill website

North American Sustainable Refrigeration Council Releases Refrigerant Transition Hub to Help Retailers Shift from High Global Warming Refrigerants

The North American Sustainable Refrigeration Council (NASRC), an environmental nonprofit working to advance climate-friendly natural refrigerants in supermarkets, recently announced it published a [free refrigerant transition hub](#) to help retailers navigate regulation changes implemented by the American Innovation and Manufacturing (AIM) Act. Enacted in 2020, the AIM Act authorizes the Environmental Protection Agency (EPA) to phase down hydrofluorocarbon (HFC) refrigerant greenhouse gas emissions by 85% by 2036.



“HFC regulations from the AIM Act and several states are pressuring retailers to transition to climate-friendly refrigerants,” said Danielle Wright, executive director of NASRC. *“Retailers need neutral information to help them make the right decisions. NASRC works in partnership with the supermarket industry, so we are uniquely positioned to identify the gaps in available resources.”*

The federal phasedown of HFCs is expected to result in refrigerant shortages and significant price increases. In Europe, refrigerant prices increased by 900% following a similar HFC phasedown. Also, new legislation introduced in states such as California proposed to ban the sale and distribution of virgin HFC refrigerants as early as 2025, further driving the need for natural refrigerant solutions.

NASRC will continue to evolve [the hub](#) as state and federal governments pass new legislation. Some of the resources available now include:

- [HFC Policy Tracker](#) – An interactive map to aid retailers in navigating the complex system of regulations by tracking the latest policies at the federal and state levels.
- [Natural Refrigerants in Supermarkets Factsheet](#) – An overview of why natural refrigerants in supermarkets are one of the most impactful and cost-effective climate solutions.

- [Nat Ref Tech Library](#) – The most comprehensive collection of presentations on the latest natural refrigerant technologies.

EUROPE AND CENTRAL ASIA

15. Europe and Central Asia (ECA) Meeting on Czech Republic's Montreal Protocol Experience and preparation of Kigali HFC implementation plans (KIPs)

Prague, Cheb, Czech Republic, 20-22 September 2022 - As part of UNEP OzonAction's Compliance Assistance Programme under the Montreal Protocol, European and Central Asian countries met in Prague / Cheb to learn from Czech Republic's Montreal Protocol experience and to share information on the preparation of HFC phase-down plans under the Kigali Amendment.

The first physical meeting of the Regional Montreal Protocol Network for Europe and Central

Asia (ECA network) since the outbreak of the Covid-19 pandemic was jointly organized by UNEP OzonAction, the Ministry of Environment of the Czech Republic, and the Czech halon bank EAF protect s.r.o. The first day of the meeting that took place at the Ministry of Environment in Prague, was opened by Mr. Kurt Dědič, Director of the Air Protection Department of the Ministry of Environment of the Czech Republic. The second and third days of the meeting took place at the Czech halon bank EAF protect s.r.o. in Cheb, and the participants were warmly welcomed by the Mayor of Cheb, Mr. Antonín Jalovec.

The participants included Montreal Protocol Officers of the ECA network countries and Uzbekistan, representatives of the Ozone Secretariat, the Multilateral Fund Secretariat, implementing agencies UNEP, UNDP and UNIDO, and the Senior Monitoring and Evaluation Officer. The meeting was supported by experts of the Czech Ministry of Environment, the Czech halon bank EAF protect s.r.o., Czech sector experts and company Kidde Deugra Brandschutzsysteme.



UNEP environment programme

Multilateral Fund for the Implementation of the Montreal Protocol

Ministry of the Environment of the Czech Republic

UNDP

UNIDO

EUROPE & CENTRAL ASIA (ECA) MEETING ON CZECH REPUBLIC'S MONTREAL PROTOCOL EXPERIENCE AND PREPARATION OF KIGALI HFC IMPLEMENTATION PLANS (KIPs) IN PRAGUE / CHEB, CZECH REPUBLIC, 20-22 SEPTEMBER 2022

MEDIA BRIEFING

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Participants of the ECA meeting in Prague, Czech Republic, on 20 September 2022

Overview of topics discussed

The introductory presentation on the impact of UV radiation on human health led participants to the report of the Ozone Secretariat on the status of compliance, reporting and ratification of the Kigali Amendment in the ECA region, and outcomes of the Implementation Committee and OpenEnded-Working Group meetings. Overall, countries in the ECA region comply with their Montreal Protocol obligations, and Kazakhstan complies with its plan of action to return to compliance.

The Fund Secretariat's summary of decisions of the 89th and 90th meetings of the Executive Committee focused on the review of institutional strengthening projects, potential strategies, policy measures and activities for HFC phase-down plans, the implementation of the operational policy on gender mainstreaming and the development of cost guidelines for the phase-down of HFCs in Article 5 countries. The latter shall consider criteria for funding sound management of used and unwanted controlled substances, funding for HFC phase-down in the refrigeration servicing sector, and options for mobilizing financial resources for maintaining / enhancing energy efficiency when replacing HFCs with low-GWP alternatives, among others. Low volume-HCFC consuming (LVC) countries might include additional funding in their HPMP tranche submissions for introducing low or zero GWP alternatives and for maintaining energy efficiency in the refrigeration servicing sector.

For the first time the participants were introduced to the monitoring and evaluation work of the Multilateral Fund which includes the evaluation of demonstration projects for low-global warming potential (GWP) alternatives to HCFCs, the preparation of terms of reference for evaluation of enabling activities for HFC phase-down, and the evaluation of UNEP OzonAction's regional networks. The Senior Monitoring and Evaluation Officer of the Multilateral Fund conducted a series of bilateral interviews with the Montreal Protocol Officers and encouraged them to respond to the online survey.

Czech experts lavishly shared their Montreal Protocol experience delivering the presentations on ODS and F-gas legislation, training, assessment and certification, critical uses of ODS in military and aviation, F-gases application in fire protection, collection and disposal of ODS and F-gases, the system of recovery, recycling and reclaim of refrigerants, different types of fire extinguishers, ODS and F-gases in the Czech customs and the link to the EU single window system, use of ODS and F-gases for mobile air-conditioning and building insulation, the role of the Czech RAC association, the market place for F-gas reuse, the role of the national environmental fund and the collection of statistical data on disposal.

National cooling plans and the cool-up programme were presented by UNDP followed by an overview of initiatives related to gender mainstreaming by UNEP OzonAction instigating the experience exchange among the countries on the lessons learned from KIP preparation and how gender mainstreaming could be integrated into that effort. The representative of the Fund Secretariat provided their expectation and guidance on KIP preparation.

Highlights included the visit of the EAF protect s.r.o. facility where pressure cylinders for fire protection are serviced and filled, and where controlled substances used for fire protection are recycled and reclaimed with main applications in military, aviation, and rail transport. In the training facility, real fire protection systems used in tanks, airplanes and trains were demonstrated. Once a spark is detected, they react so fast, that fire and

explosions are prevented, and people protected. Their operation was demonstrated in the courtyard of EAF protect s.r.o., showing a huge fire ball without suppression system, and no fire with an operating system based on HFC-236fa in place.

In a specially equipped room, it was demonstrated how the inert gas (mixture of nitrogen, argon, and carbon dioxide) was blown into the room extinguishing flames, while allowing people to continue breathing. Volunteers were allowed to stay in the room during the demonstration. The advantage of that system is that it protects individuals without damaging the equipment.

All the presentations and background documents were included in the meeting USB and distributed to the participants on the last meeting day. They are also available from OzonAction meeting portal.

Needs and priorities of the ECA network countries

The results of the ECA survey on needs and priorities were presented at the meeting. The majority of the member countries preferred the two-hour online meetings hold four times per year, and three-day physical network meetings hold biennially involving a wide range of stakeholders with English-Russian interpretation. They supported holding the physical meeting of Montreal Protocol Officers and RAC experts in parallel to the 10th IIR International Conference on CO₂ and Ammonia Refrigeration Technologies in Ohrid, North Macedonia, on 27-29 April 2023. Some countries requested country-to-country assistance and small-scale meetings to address issues of joint concern.

Interactive sessions and wishes for the future

The meeting agenda included several interactive sessions including short “messages of wisdom” by the secretariats, a “gender on the agenda” quiz to raise awareness on the importance of gender mainstreaming and a “wishes for the future” session reflecting on the current state of the network /region. Based on inputs by the participants, a new ECA poster has been created.

Meeting evaluation

The overall evaluation of the meeting is excellent (82%) and good (17%) based on the results of the evaluation questionnaire completed by the meeting participants.

Meeting documents and presentations are available on the [OzonAction meeting portal](#).

Contacts:

[Halvart Koppen](#), UNEP OzonAction
[Jana Masickova](#), Czech Ministry of Environment
[EAF](#) protect s.r.o.

Image: OzonAction website

FEATURED

Overview for the meetings of the ozone treaties in 2022

69th IMPCOM, Montreal, Canada | 29 October 2022

33rd MOP Bureau, Montreal, Canada | 30 October 2022

34th MOP, Montreal, Canada | 31 October - 04 November 2022

Click [here](#) for past and upcoming Montreal Protocol Meetings Dates and Venue.

SunSmart Global UV App helps protect you from the dangers of the sun and promotes public health.

A new app for mobile phones that provides localized information on ultraviolet (UV) radiation levels has been launched by the World Health Organization (WHO), the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP) and the International Labour Organization (ILO). The *SunSmart Global UV app* is available free of charge

at both the [Apple App](#) and [Google Play](#) stores. It provides personalized options so that users can take actions to protect prolonged, excessive UV exposure, a major cause of skin cancer and other UV related diseases. The app allows the inclusion of national and local data streams and adaptation to multiple languages – it is currently available in Chinese, English, French, Russian, Dutch and Spanish.



Online introductory course 'International legal framework on ozone layer protection'

Designed for government representatives and national stakeholders new to the Vienna Convention and Montreal Protocol, students of environmental law, and anyone interested in learning about the ozone treaties, the [online course](#) launched by the Ozone Secretariat aims to provide an introduction to the international legal framework on ozone layer protection.



[United Nations Environment Programme \(UNEP\), Ozone Secretariat](#)

Free teaching kits on ozone layer and environmental protection

- New free online teacher toolkits and lesson plans based on the success of UNEP's Ozone Secretariat's [Reset Earth](#) animation and video game
- Targeting Tweens by adopting animation and gamification to create innovative online lessons to raise awareness on ozone layer and environmental protection
- Available online in digital and print format for universal access



Read/download >>> [Ozone Secretariat's education platform](#)

The UN Environment Assessment Panels

The Assessment Panels have been vital components of ozone protection since the Montreal Protocol was first established. They support parties with scientific, technological and financial information in order to reach decisions about ozone layer protection and they play a critical role in ensuring the Protocol achieves its mandate. The Assessment Panels were first agreed in 1988 to assess various direct and indirect impacts on the ozone layer. The original three panels are:

- [The Technology and Economic Assessment Panel](#)
- [The Scientific Assessment Panel](#)
- [The Environmental Effects Assessment Panel](#)

In the past there were 4 main panels. The Panels for Technology and Economic Assessments were merged in 1990 into one Panel, now called the Technology and Economic Assessment Panel.

Why are the three current panels important to ozone layer protection? Each carries out assessment in its respective field. Every four years, the key findings of all panels are consolidated in a synthesis report. [Learn more >>>](#)



[THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL](#)

The Multilateral Fund for the Implementation of the Montreal Protocol

The Fund is dedicated to reversing the deterioration of the Earth's ozone layer. It was established by a decision of the Second Meeting of the Parties to the Montreal Protocol (London, June 1990) and began its operation in 1991. The main objective of the Fund is to assist developing country parties to the Montreal Protocol whose annual level of consumption of the ozone depleting substances (ODS) chlorofluorocarbons (CFCs) and halons is less than 0.3 kilograms per capita to comply with the control measures of the Protocol. Currently, 147 of the 197 Parties to the Montreal Protocol meet these criteria. They are referred to as Article 5 countries.

The Multilateral Fund is managed by an Executive Committee with equal membership from developed and developing countries. Since the inception of the Fund, the Executive Committee has held 90 meetings. The Fund Secretariat, located in Montreal, assists the Executive Committee in its tasks. Projects and activities supported by the Fund are implemented by four international implementing agencies.

As at September 2022, the contributions received by the Multilateral Fund from developed countries, or non-Article 5 countries, totalled over US\$ 4.49 billion. The Fund has also received additional voluntary contributions amounting to US \$25.5 million from a group of donor countries to finance fast-start activities for the implementation of the HFC phase-down.

Last 16 July 2022, following the adoption of interim budgets for the Multilateral Fund due to the Covid-19 pandemic, the Fifth Extraordinary Meeting of the Parties to the Montreal Protocol (5th ExMOP) decided on the replenishment of the Multilateral Fund for the triennium 2021-2023. The Parties agreed on a budget of US \$540 million for the triennium.

To facilitate phase-out by Article 5 countries, the Executive Committee has approved 144 country programmes, 144 HCFC phase-out management plans and has funded the establishment and the operating costs of ozone offices in 145 Article 5 countries.

- [Updated guide for the presentation of stage II of HCFC phase-out management plans \(August 2022\)](#), 9/19/2022
 - [The provisional agenda for the 91st meeting is now posted](#), 9/14/2022
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- [The Information Note for the 91st meeting is now available](#), 9/9/2022
- [Policies, Procedures, Guidelines and Criteria of the Multilateral Fund \(July 2022\)](#), 7/29/2022
- [HCFC phase-out management plans and HCFC production phase-out management plans \(July 2022\)](#), 7/28/2022
- [Updated guide for project preparation of Stage I of Kigali HFC implementation plans \(KIP\) \(April 2022\)](#), 4/28/2022
- [Executive Committee Primer 2022](#), 1/23/2022
- [Adjusted consolidated business plan of the Multilateral Fund 2022-2024](#), 1/5/2022

>>> Click [here](#) for the Executive Committee upcoming and past Meetings and related documents.



OzonAction

[OzonAction Compliance Assistance Programme](#) produces and outreaches a wide variety of information and capacity building materials and tools that support the implementation of the Montreal Protocol programs and assist Article-5 countries in meeting the compliance targets. These include publications, technology briefs and factsheets, mobile applications, videos, e-Learning, modelling, and database programs and special educational or certification programs.

The section below features several of our most recent products.
Visit [OzonAction website](#) for more information, discover the entire range of products.

Images in this section are by OzonAction

Refrigeration, Air-Conditioning, and Heat Pumps (RACHP) Associations & Organizations: This Knowledge Map provides a global directory of RACHP associations, societies, and organisations around the world. These are key stakeholders for ensuring safe and efficient refrigerant transitions.



Local Technical & Vocational Education and Training (TVET): This Knowledge Map provides a global directory of TVET entities and centres around the world. These are the strategic partners for conducting and promoting training and certification programmes related to the refrigeration servicing sector.

Click [HERE](#) to access the OzonAction Knowledge Maps tool

Click [HERE](#) to download the OzonAction Knowledge Maps tool flyer

Gas Card Tool: Web-based Visual Printable Cards of Refrigerant Gases

Content of Gas Cards - Each Gas Card is printable (in PDF or image format) and includes the following information about each substance/gas: a) General Characteristics (Chemical name, formula and type, ASHRAE designation, Trade names, Harmonized System (HS) codes, Chemical Abstract Service (CAS), United Nations (UN) numbers, Blend/ mixture components, Montreal Protocol Annex and Control measures, main usage, etc.) b) Gas Performance—Radar Chart (in terms of: Ozone depleting potential-ODP, Global warming potential- GWP, Toxicity Class & Flammability Class) c) Environmental and Safety Impact, and Safety Impact (with visualization of Toxicity & Flammability Class, Hazardous Symbols).



More Information - The Gas Card web based tool is part of UNEP OzonAction's portfolio of activities and tools to assist various stakeholders in developing countries, including customs officers and technicians, to achieve and maintain compliance with the Montreal Protocol on Substances that Deplete the Ozone Layer. In the left navigation bar of the Gas Card tool web page, you will find a list of commonly used HFCs and HFC Blends in different sectors.*

Using the Gas Card web-based tool

- The Gas Card tool is available online on the [OzonAction website](#)
- Read the full [2021 annual iPIC report](#)
- See the [flyer](#) introducing the new iPIC platform

* Based on the Overall Analysis of the Results of the Survey of ODS Alternatives Report (conducted in 119 countries from 2012 to 2015)

OzonAction and GFCCC launch the methodology questionnaires the Cold Chain Database Initiative

The Global Food Cold Chain Council (GFCCC) and the United Nations Environment Programme (UNEP) OzonAction announced the launch of their Cold Chain Database and Modeling initiative. The initiative marks the first formal step to assist developing countries in identifying their cold chain baseline along with consumption of relevant HCFCs or HFCs or other refrigerants. The initiative was conceived in 2019 and kicked off during the 31st Meeting of Parties to the Montreal Protocol (Rome, Italy), which concluded with the Rome Declaration on “The Contribution of the Montreal Protocol to Food Loss Reduction through Sustainable Cold Chain Development”.



> [GFCCC-UNEP OzonAction Cold Chain Modelling Press Release](#)

> [GFCCC-UNEP Cold Chain Database Methodology Final](#)

> For countries or partners interested to use the model data collection detailed questionnaires, please fill in the [Expression of Interest and NDA of Cold Chain Database](#) form and return to [Ayman Eltalouny](#)

Contact: [Ayman Eltalouny](#), Coordinator International Partnerships, UNEP, OzonAction



[HCFC Quota and Licence Tracker](#) - a new desktop application to assist with HCFC licences and quotas

National Ozone Officers have the great responsibility of managing the allocation and monitoring of quotas for substances controlled under the Montreal Protocol. This process can be complex with many

importers, especially if the country imports a range of different hydrochlorofluorocarbons (HCFCs) and mixtures containing HCFCs. To address this challenge, OzonAction developed a new desktop application that helps Ozone Officers with the tasks of planning, calculating, monitoring, and managing consumption quotas and licences. It can be used on a daily basis to track and manage the current year's quota allocations for different importers, or for future planning by trying different scenarios that adjust the type of substances imported, their quantity, or the number of importers. The HCFC Quota and Licence Tracker allows Ozone Officers to see the effect of such scenarios on the national HCFC consumption and helps ensure that the quotas stay within agreed HCFC Phase-out Management Plan (HPMP) targets. For countries that have ratified the Kigali Amendment, in the future OzonAction will extend the tracker to include hydrofluorocarbons (HFCs) once countries begin designing their quota systems for those controlled substances. **Access the:**

- [HCFC Quota tracker app](#)
- [Flyer for more information on the tracker](#)
- [Short video tutorial on the OzonAction YouTube Channel](#)

[GWP-ODP Calculator Application](#) - Updated- “Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and CO₂-equivalent tonnes” - Data are extremely important for the Montreal Protocol community, and the data reporting formats for both A7 and CP have changed recently, to a large degree triggered by the Kigali Amendment. HFCs, blends, CO₂-equivalent values, etc, now have to be addressed much more frequently by Ozone Officers during their daily work. Sometimes the terminology and values are complex and can be confusing, and it helps to have it all the official facts and figures in one place. Conversion formulas need to be applied to calculate CO₂-eq values from both GWP and metric tonne values. This free app from OzonAction is a practical tool for Ozone Officers to help demystify some of this process and put frequently needed information at their fingertips.



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What's new in the app:

- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- A new **Kigali Amendment mode** - in this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs
- Latest updated ODP and GWP values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change (IPCC) reports
- References added for sources of all values
- New refrigerant mixtures (with ASHRAE -approved refrigerant designations)

If you already have the application installed on your device, be sure to update to benefit from the new features. The app can be viewed in English, French or Spanish.



Smartphone Application: Just search for “*GWP-ODP Calculator*” or UNEP in the Google Play store or use the QR code – free to download! If you already have the application installed on your device, be sure to update to benefit from the new features.



Desktop Application: *GWP-ODP Calculator* is also available online on the OzonAction [website](#)



Watch the new short introductory tutorial **video** on the *GWP-ODP Calculator* - available now on [YouTube](#)

>>> **Read/download the [flyer](#)**

Updated OzonAction "WhatGas?" Mobile App - The OzonAction 'WhatGas?' application is an information and identification tool for refrigerant gases: ozone depleting substances (ODS), HFCs and other alternatives. It is intended to provide some stakeholders, including Montreal Protocol National Ozone Officers, customs officers, and refrigeration and air-conditioning technicians with a modern, easy-to-use tool that can be accessed via



mobile devices or the OzonAction website to facilitate work in the field, when dealing with or inspecting ODS and alternatives, and as a useful reference tool. This latest release includes the 2022 Harmonized System (HS) Codes for HFCs and blends, which facilitates the process of inspection and identification of controlled and alternative substances.

Scan the QR code to download the app (*currently available for Android devices only*). If you've already downloaded the app, to update visit the [Google Play Store](#)

RAC Technician Videos - Full length films! Two 'full length' videos for refrigeration and air-conditioning (RAC) sector servicing technicians: on 1) Techniques, Safety and Best Practice and 2) Flammable Refrigerant Safety.

The OzonAction Refrigeration and Air-Conditioning Technician Video Series consists of instructional videos on techniques, security and best practice and flammable refrigerant safety. They are intended to serve as a complementary training tool RAC sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training. The videos are not intended to replace structured formal technician training, but to supplement and provide some revision of tips and skills and to build on training already undertaken.



These videos are based on the successful UNEP OzonAction smartphone application, the RAC Technician Video Series app. This application has been downloaded on more than **86,000** devices since its launch.

Following many requests to make the videos more versatile and better suited to classroom and training settings, OzonAction has responded to this demand and produced two 'full-length' instructional videos.

You may wish to share this message and the flyer with:

- Your national/regional RAC associations
- Training or vocational institutes
- Master RAC trainers in your country
- Any other interested national stakeholders



Watch these videos on the OzonAction YouTube Channel:

- [Techniques, Safety and Best Practice](#)
- [Flammable Refrigerant Safety](#)

↓ The videos are also available for download by request from UNEP OzonAction:
unep-ozonaction@un.org



If you prefer to access the video clips via the OzonAction smartphone application, just search for “RAC Technician Video Series” or UNEP in the Google Play Store and iTunes/App Store or scan the QR code – **Free to download!**

The flyer is available from the [OzonAction website](#).

[Refrigerant Cylinder Colours: What has Changed](#) - A new UNEP OzonAction factsheet on the new AHRI revised guideline on a major change to refrigerant cylinder colours - One of the ways in which refrigeration cylinders are quickly identified is by cylinder colour. Although there was never a truly globally-adopted international standard, the guideline from the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) although not required by law was used by the vast majority of industry and chemical producers around the world. An AHRI revised guideline, first published in 2015, now removes paint colour assignments for refrigerant containers and specifies that all refrigerant containers should have the same paint colour from 2020 onwards. NOOs and technicians should be aware of this change and inform national stakeholders, as well as familiarising themselves with relevant container labels and markings for refrigerants. **Read/download the [factsheet](#)**



Update on [new refrigerants designations and safety classifications](#) - The latest version of the factsheet providing up to date information on refrigerant designations and safety classifications is now available (September 2020 update). The factsheet, produced by **ASHRAE** in cooperation with **UN Environment Programme OzonAction** is updated every 6 months. **Read/download the [factsheet](#)**

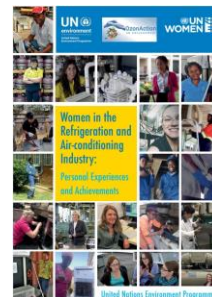


Contact: [Ayman Etlouny](#), OzonAction, UN Environment Programme

[OzonAction's iPIC platform - Updated](#) - Collaboration between China and Thailand using OzonAction's informal Prior Informed Consent (iPIC) system has resulted in the prevention of a huge consignment of ozone-depleting and climate damaging hydrochlorofluoro-carbons (HCFCs). Those chemicals, which are primarily used as refrigerants for air conditioners and fridges, are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer and are being phased out by all countries according to a specific timeline.



[Women in the refrigeration and air-conditioning industry: Personal experiences and achievements](#) - The United Nations Environment Programme's (UNEP), OzonAction, in cooperation with UN Women, has compiled this booklet to raise awareness of the opportunities available to women and to highlight the particular experiences and examples of women working in the sector and to recognise their successes. All of the professionals presented in the booklet are pioneers. They are role models whose stories should inspire a new generation of young women to enter the weld and follow in their footsteps. **Read/download the [publication](#)**

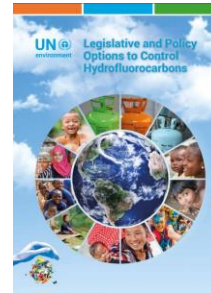


As part of IIR and UNEP OzonAction's partnership, a set of Cold Chain Technology Briefs was released over the past few years, which includes in-depth summaries about the cold chain in different key sectors. They include descriptions of technology, refrigerant options and trends and conclude with prospects and challenges. They cover the main cold chain sub-sectors, i.e., [Production & Processing](#), [Cold Storage](#), [Transport Refrigeration](#), [Commercial & Domestic](#), and [Fishing Vessels](#). **Download the Cold Chain Technology brief in [English](#) | [French](#) | [Russian](#) | [Spanish](#)**



PUBLICATIONS

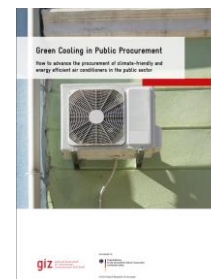
Legislative and Policy Options to Control Hydrofluorocarbons - In order to follow and facilitate the HFC phase-down schedules contained in the Kigali Amendment, the Parties, including both developed and developing countries, will have to implement certain measures. This booklet contains a recommended set of legislative and policy options which the developing (Article 5) countries may wish to consider for implementation. It is intended to be a guide/tool for countries. [Read/download](#)



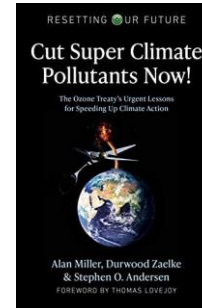
Latest issue of Centro Studi Galileo magazine, **Industria & Formazione**, n. [7-2022](#) (in Italian).



Green Cooling in public procurement How to advance the procurement of climate-friendly and energy-efficient cooling equipment in the public sector? Air conditioning in public buildings is often responsible for around 50% of total electricity consumption. Switching to climate-friendly cooling technologies ("Green Cooling") can reduce costs and energy consumption and improve the carbon footprint of public buildings. This study takes a closer look at the benefits of Green Cooling in the public sector and discusses current barriers and possible solutions. The information presented provides a solid basis to revise current procurement criteria for sustainable cooling systems in public buildings. [Read/Download the study](#)



Cut Super Climate Pollutants Now!: The Ozone Treaty's Urgent Lessons for Speeding Up Climate Action (Resetting Our Future). We have a decade or less to radically slow global warming before we risk hitting irreversible tipping points that will lock in catastrophic climate change. The good news is that we know how to slow global warming enough to avert disaster. Cut Super Climate Pollutants Now! explains how a 10-year sprint to cut short-lived "super climate pollutants" -- primarily HFC refrigerants, black carbon (soot), and methane -- can cut the rate of global warming in half, so we can stay in the race to net zero climate emissions by 2050.



Authors: Alan Miller, Durwood Zaelke, Stephen O. Andersen.

E-Book on Process Safety Management (PSM) Training for Ammonia Refrigeration - a new e-book about the critical elements of a process safety management (PSM) training program for facilities operating an ammonia refrigeration system.

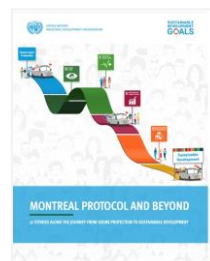


The e-book, titled "[7 Keys to a Compliant PSM Training Program for Ammonia Refrigeration](#)," outlines important questions a facility's program should address and questions that trained plant personnel should be able to answer. Topics covered include:

- Safety hazards and health considerations
- Emergency shutdown procedures
- Addressing deviations from system operating limits
- Risks and costs of non-compliance with regulatory standards

Request free Download [here](#)

[Montreal Protocol and beyond: 17 stories along the journey from ozone layer protection to sustainable development](#) - The 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs) embody the global commitment to build a more sustainable future for all. These universally agreed objectives address the most urgent environmental, social and economic challenges of our time... **Read/Download [here](#)**



The Green Customs Guide to Multilateral Environmental Agreements was designed to promote sustainable trade and encourage customs and border control officers to take on a proactive role in protecting the environment. The guide provides useful information and guidance about relevant trade-related multilateral environmental agreements (MEAs), thus facilitating legitimate trade in environmentally sensitive items while preventing illicit trade in such items and contributing to the achievement of the [Sustainable Development Goals](#).



Read/Download the [full report](#).

See pages 91-98 on "How the Montreal Protocol regulates trade", and "Montreal Protocol-specific training materials for customs officers."

Photovoltaic-powered Air Conditioning in Buildings - Space cooling in buildings is characterized by enormous growth rates, due to increasing ambient temperatures, growing population and urbanisation. Air-conditioned buildings in many countries are largely dominated by mid to low appliance energy efficiency levels, highly climate-damaging refrigerants as well as fossil-fuel based electricity supply. This in sum generates a huge amount of greenhouse gas (GHG) emissions, furthering climate change. The objective of this paper is to further unfold the technical and economic potential of solar PV-powered green air conditioners. Therefore, it focuses on the most widely applied type of active cooling appliance: single split-type air conditioning systems with a cooling capacity up to 5 kW. It looks at the current development of technical main components and based on that defines model cases for hybrid and off-grid solutions for private and small commercial applications. The technical and economic potential for these cases is then analysed for 13 countries worldwide. Subsequently, a case study on Médecins Sans Frontières' (MSF) solar AC project in Haiti provides practical insights on the use of PV-powered AC systems in the context of off-grid social infrastructure. Read/Download the study [here](#)



International Institute of Refrigeration (IIR) New Informatory Note. Low-GWP Refrigerants: Status and Outlook - The latest IIR Informatory Note outlines the options available for low-GWP refrigerants and their respective performance. It provides a series of recommendations on refrigerant selection criteria, research priorities and personnel training. A [Summary for policymakers](#) outlining the main conclusions and recommendations of this Informatory Note is available in open access. Also available in [French](#) language.



MISCELLANEOUS



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[REGISTER NOW](#)

The banner features a blue background with a pair of hands holding a globe made of puzzle pieces. The globe includes a shopping cart icon with a plant inside, symbolizing sustainable refrigeration solutions. The text is white and orange, and a registration button is located at the bottom right.

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Faculty of Mechanical Engineering, Skopje
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I am in the Montreal Protocol Who's Who... Why Aren't You?



The United Nations Environment Programme, OzonAction, in collaboration with Marco Gonzalez and Stephen O. Andersen are updating and expanding the "**Montreal Protocol Who's Who**".

We invite you to submit your nomination*, and/or nominate Ozone Layer Champion(s). **The short profile should reflect the nominee's valuable work related to the Montreal Protocol and ozone layer protection.**

Please notify and nominate worthy candidates

through the [on-line form](#).

We look forward to receiving your nomination(s), and please feel free to contact our team for any further assistance concerning your nomination.

Take this opportunity to raise the profile of women and men who made an important contribution to the Montreal Protocol success and ozone layer protection.

- View the «Montreal Protocol Who's Who» [Introductory video](#)
- Contact : [Samira Korban-de Gobert](#), UN Environment Programme, OzonAction

** If you are already nominated, no need to resubmit your profile*



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